

ABSTRACT

Grain dust contained LPS Endotoxin can lead to airway inflammation, lung function decline, and pneumonitis. The aims of the study were to analyze the impact of the rice dust endotoxin LPS in decreasing the pulmonary function, the increase of serum IL-8, and respiratory complaints on rice milling machine operator.

The method of this study was analytical observational and a prospective longitudinal study. The samples in this study were 18 workers from the Village of Bangsri, Bulubrangsi, and Godog. The dependent variables in this study were IL-8 serum levels, pulmonary function, and respiratory complaints, while the independent variables were the level of personal rice dust and endotoxin LPS from the rice dust. Age, years of works, nutritional status (BMI) and smoking habits were considered as confounding variables.

The results obtained after 8 hours of work were an average of rice dust was equal to 5.68 mg/m³ and endotoxin LPS levels in grain dust amounted to 232.22 EU/m³. All respondents experienced a decrease in FVC. In FEV₁ is 1 (5.6%) experienced an increase, while others decreased (94.4%). With an average of 0.52% reduction in FVC, whereas in FEV₁ by 0.41%. Most respondents (83.3%) increased serum levels of IL-8 blood, with average about 11,62 pg/ml. All respondents in the mill had respiratory complaints, respondents who had minor respiratory complaints and mild categories were respectively 22.2% and 27.8%.

The results of the study using Mannova test is that there are strong association between endotoxin levels with the increased of IL-8 ($p < 0,05$) and very strong association with the decreased of pulmonary function ($p < 0,01$). Whereas with multiple logistic regression test, respiratory complaints and other parameters have no significant association ($p > 0,05$). A continuous monitoring of FEV₁ are important to detect short-term changes may help to identify the subjects at risk.

Keywords: Grain dust, endotoksin LPS, pulmonary function, interleukin 8 (IL-8), respiratory complains